JVC

SERVICE MANUAL

LCD FLAT TELEVISION

LT-40X776/SP

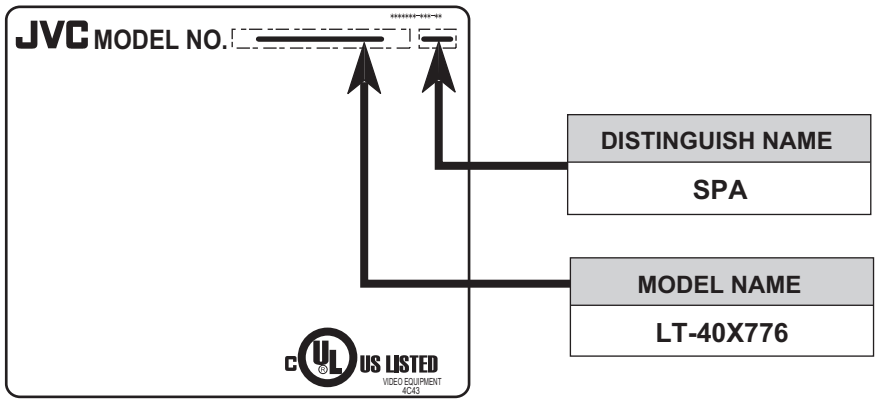
BASIC CHASSIS
FL2

Supplementary

LT-40X776/SP is the model whose production place of P.W.B. ASS'Y was changed based on LT-40X776/S. Therefore, this service manual describes only the items which differ from those of the LT-40X776/S service manual.
For details other than those described in this manual, please refer to the LT-40X776/S service manuals (No.YA301, 2005/8) (No.YA301B, 2006/2).

HOW TO IDENTIFY MODELS

Distinguish name is added to the model name after at the Rating label.



No.YA301C
2006/7

DIFFERENCE LIST

USING P.W. BOARD (Page 3-2)

P.W.B ASS'Y Name	LT-40X776/S	LT-40X776/SP	DESCRIPTION
DIGITAL SIGNAL PWB	SFL0D134A-M2	SFL0D134A-SS	Change only in PWB ASS'Y No.

EXPLODED VIEW PARTS LIST-1 (Page 3-3)

⚠	Ref. No.	Part No.		PART NAME	DESCRIPTION
		LT-40X776/S	LT-40X776/SP		
⚠	203	SFL0D134A-M2	SFL0D134A-SS	DIGITAL SIGNAL PWB	

SECTION 1
PRECAUTION

Please refer to "LT-40X776/S (No.YA301)" about this section.

SECTION 2
SPECIFIC SERVICE INSTRUCTIONS

Please refer to "LT-40X776/S (No.YA301)" about this section.

SECTION 3
DISASSEMBLY

Please refer to "LT-40X776/S (No.YA301)" about this section.

SECTION 4
ADJUSTMENT

Please refer to "LT-40X776/S (No.YA301)" about this section.

SECTION 5
TROUBLESHOOTING

Please refer to "LT-40X776/S (No.YA301)" about this section.

JVC
Victor Company of Japan, Limited
Display Category 12, 3-chome, Moriya-cho, Kanagawa-ku, Yokohama-city, Kanagawa-prefecture, 221-8528, Japan

(No.YA301C)

Printed in Japan
VPT

JVC

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LCD FLAT TELEVISION

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BASIC CHASSIS
FL2

Supplementary

Please be informed that there are errors in the following service manuals.
LT-40X776/S (No.YA301 2005/8)

CORRECTION ITEM

PRINTED WIRING BOARD PARTS LIST

CARD P.W. BOARD ASS'Y (Page 3-12)

⚠	Ref. No.	PART No.		PART NAME	DESCRIPTION
		INCORRECT	CORRECT		
	IC1501	SA16M90TFIR1D03	SA16M90TFIR1D10	IC(MICRO C ROM)	

No.YA301B
2006/2

SECTION 1
PRECAUTION

Please refer to "LT-40X776/S (No.YA301)" about this section.

SECTION 2
SPECIFIC SERVICE INSTRUCTIONS

Please refer to "LT-40X776/S (No.YA301)" about this section.

SECTION 3
DISASSEMBLY

Please refer to "LT-40X776/S (No.YA301)" about this section.

SECTION 4
ADJUSTMENT

Please refer to "LT-40X776/S (No.YA301)" about this section.

SECTION 5
TROUBLESHOOTING

Please refer to "LT-40X776/S (No.YA301)" about this section.

JVC
Victor Company of Japan, Limited
Flat Panel Display Category 12, 3-chome, Moriya-cho, Kanagawa-ku, Yokohama-city, Kanagawa-prefecture, 221-8528, Japan

(No.YA301B)

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VPT

JVC

SERVICE MANUAL

LCD FLAT TELEVISION

LT-40X776/S

BASIC CHASSIS
FL2

I'Art PALETTE

D.I.S.T. Digital Image Scaling Technology

BBE

HDMI HIGH-DEFINITION MULTIMEDIA INTERFACE

i HDTV

DCR DOLBY DIGITAL

TABLE OF CONTENTS

No.YA301
2005/8

SPECIFICATION

Items		Contents
Dimensions (W × H × D)		100.0 cm × 73.4 cm × 32.5 cm (39-3/8" × 29" × 12-7/8") [Included stand] 70.3 cm × 48.3 cm × 11.5 cm (39-3/8" × 26-1/2" × 4-1/4") [TV only]
Mass		31.5 kg (69.3 lbs) [Included stand] 24.8 kg (54.3 lbs) [TV only]
Power Input		AC120 V , 60 Hz
Power Consumption		226 W (Max)
TV RF System (Analog / Digital)	Analog Digital	CCIR (M) ATSC terrestrial / Digital cable
Color System (Analog)		NTSC
Stereo System (Analog)		BTSC (Multi Channel Sound)
Teletext System (Analog)		Closed caption (T1-T4 / CC1-CC4)
TV Receiving Channels and Frequency (Analog)	VHF Low VHF High UHF CATV	02 ch - 06 ch : 54 MHz - 88 MHz 07 ch - 13 ch : 174 MHz - 216 MHz 14 ch - 69 ch : 470 MHz - 806 MHz 54 MHz - 804 MHz Low Band : 02 - 06 High Band : 07 - 13 Mid Band : 14 - 22 Super Band : 23 - 36 Hyper Band : 37 - 64 Ultra Band : 65 - 94, 100 - 135 Sub Mid Band : 01, 96 - 99
TV / CATV Total Channel		191 Channels
Intermediate Frequency (Analog)	Video IF Sound IF	45.75 MHz 41.25 MHz (4.5 MHz)
Color Sub Carrier Frequency (Analog)		3.58 MHz
LCD panel		40V-inch wide aspect (16:9)
Screen Size		Diagonal : 101.8 cm (H:88.5 cm × V : 49.7 cm)
Display Pixels		Horizontal : 1366 dots × Vertical : 768 dots (W-XGA)
Audio Power Output		10 W + 10 W
Speaker		6.6 cm, round type × 4
Antenna terminal (VHF/UHF)		F-type connector, 75 Ω unbalanced, coaxial
Video / Audio input [INPUT-1/2/3]	Component Video [INPUT-1] 1125i / 750p 525p / 525i S-Video [INPUT-1/2] Video Audio	RCA pin jack × 3 Y : 1 V (p-p) (Sync signal: 0.35V(p-p), 3-value sync.), 75 Ω Pb/Pr : ±0.35V(p-p), 75 Ω Y : 1 V (p-p), Positive (Negative sync provided), 75 Ω Cb/Cr : 0.7V(p-p), 75 Ω Mini-DIN 4 pin × 2 Y: 1 V (p-p), Positive (Negative sync provided), 75 Ω C: 0.286V (p-p) (Burst signal), 75 Ω 1 V (p-p), Positive (Negative sync provided), 75 Ω, RCA pin jack × 3 500 mV (rms), High impedance, RCA pin jack × 6
Digital input	Video Audio	HDMI connector × 1 (Digital-input terminal is not compatible with picture signals of computer signal) Digital: HDMI connector × 1 Anarog: 500 mV(rms) (-4 dBs), high impedance, RCA pin jack × 2
Monitor / Recording Output	S-Video Video Audio	Mini-DIN 4pin × 1 Y: 1 V (p-p), 75 Ω C: 0.286 V(p-p) (burst signal), 75 Ω 1 V (p-p), 75 Ω, RCA pin jack × 1 250 mV(rms) (-10 dBs), Fs-18 dB low impedance, RCA pin jack × 2
Audio output		500 mV (rms), Low impedance, RCA pin jack × 2
iLink Input/Output		TS In/Out (4-pin, S400) × 2, IEEE1394 compliant DTCP digital copy protection compatible
Digital Audio Optical Output		Digital SPDIF × 1
Headphone		3.5 mm stereo mini jack × 1
Remote Control Unit		RM-C14G (AA/R6 / UM-3 battery × 2)

Design & specifications are subject to change without notice.

SECTION 1
PRECAUTION

1.1 SAFETY PRECAUTIONS

(1) The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.

(2) Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

(3) Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual**. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.

(4) **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.**
Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND, the ISOLATED (NEUTRAL) : (⏚) side GND and EARTH : (⏚) side GND.
Don't short between the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND and never measure the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND at the same time with a measuring apparatus (oscilloscope etc.). If above note will not be kept, a fuse or any parts will be broken.

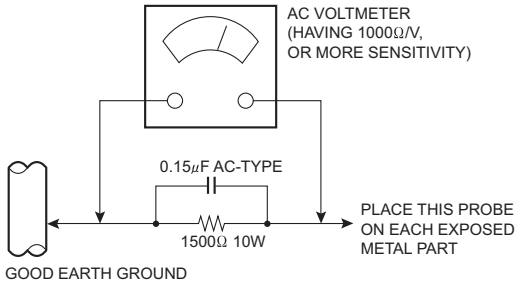
(5) When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

(6) **Isolation Check (Safety for Electrical Shock Hazard)**
After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screw heads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

a) **Dielectric Strength Test**
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3000V AC (r.m.s.) for a period of one second. (. . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
This method of test requires a test equipment not generally found in the service trade.

b) **Leakage Current Check**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).

Alternate Check Method
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000Ω per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.3V AC (r.m.s.). This corresponds to 0.2mA AC (r.m.s.).



1.2 INSTALLATION

1.2.1 HEAT DISSIPATION

If the heat dissipation vent behind this unit is blocked, cooling efficiency may deteriorate and temperature inside the unit will rise. The temperature sensor that protects the unit will be activated when internal temperature exceeds the pre-determined level and power will be turned off automatically.Therefore, please make sure pay attention not to block the heat dissipation vent as well as the ventilation outlet behind the unit and ensure that there is room for ventilation around it.

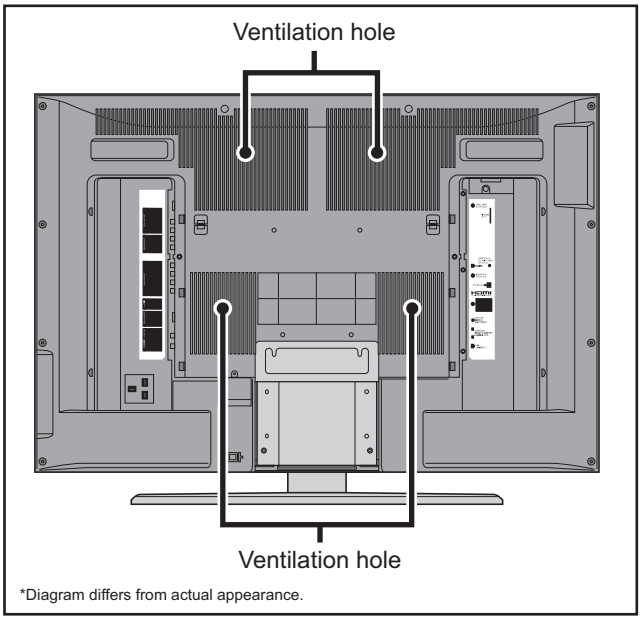


*Diagram differs from actual appearance.

1.2.2 INSTALLATION REQUIREMENTS

Ensure that the minimal distance is maintained, as specified below, between the unit with and the surrounding walls, as well as the floor etc.Install the unit on stable flooring or stands.Take precautionary measures to prevent the unit from tipping in order to protect against accidents and earthquakes.

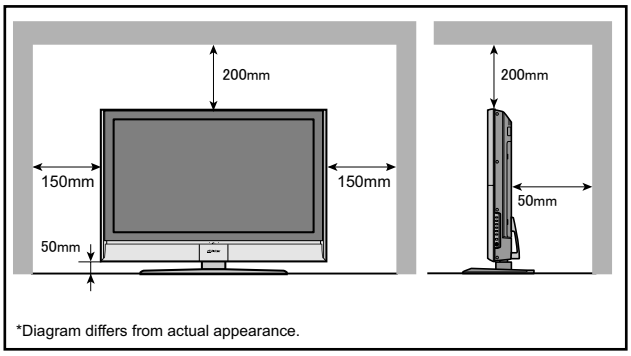


*Diagram differs from actual appearance.

1.2.3 INSTALLATION REQUIREMENTS

To ensure safety in an emergency such as an earthquake, and to prevent accidents, ensure that measures are taken to prevent the TV dropping or falling over.
Tie commercially available tough cord(s) to the hooks in the back of the TV, and fix the TV to solid walls or columns.

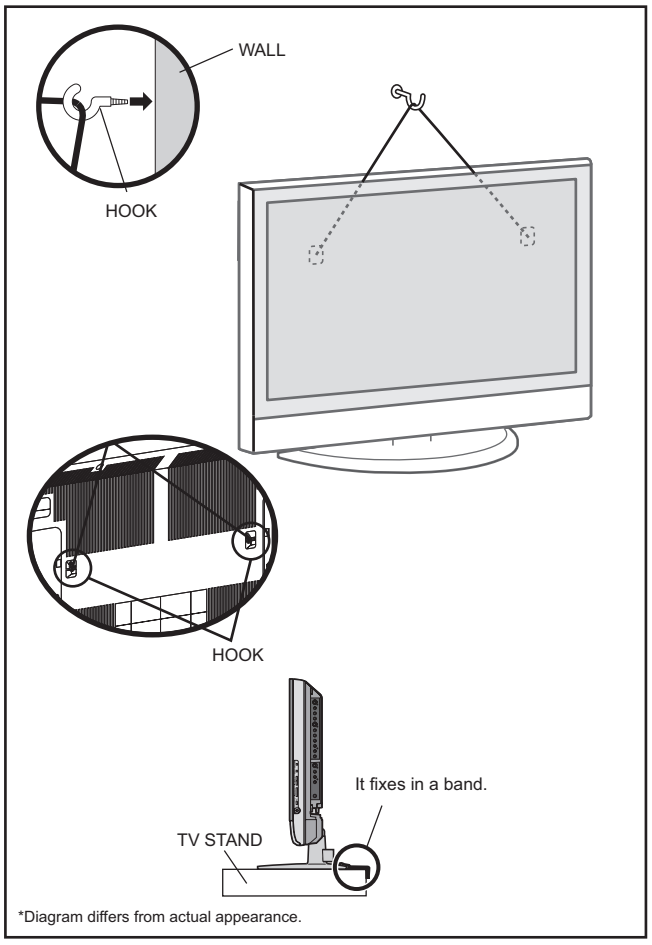


*Diagram differs from actual appearance.

1.2.4 NOTES ON HANDLING

(1) WHEN TAKING UNIT OUT OF A PACKING CASE
When taking the unit out of a packing case, do not grasp the upper part of the unit. If you take the unit out while grasping the upper part, the LCD PANEL may be damaged because of a pressure. Instead of grasping the upper part, put your hands on the lower backside or sides of the unit.

(2) AS FOR PRESSING OR TOUCHING A SPEAKER
Be careful not to press the opening of the speaker in the lower part of the unit and around them since the decorative sheet on the surface of the openings may be deformed.

1.3 HANDLING LCD PANEL

1.3.1 PRECAUTIONS FOR TRANSPORTATION

When transporting the unit, pressure exerted on the internal LCD panel due to improper handling (such as tossing and dropping) may cause damages even when the unit is carefully packed. To prevent accidents from occurring during transportation, pay careful attention before delivery, such as through explaining the handling instructions to transporters.

Ensure that the following requirements are met during transportation, as the LCD panel of this unit is made of glass and therefore fragile:

(1) USE A SPECIAL PACKING CASE FOR THE LCD PANEL
When transporting the LCD panel of the unit, use a special packing case (packing materials). A special packing case is used when a LCD panel is supplied as a service spare part.

(2) ATTACH PROTECTION SHEET TO THE FRONT
Since the front (display part) of the panel is vulnerable, attach the protection sheet to the front of the LCD panel before transportation. Protection sheet is used when a LCD panel is supplied as a service spare part.

(3) AVOID VIBRATIONS AND IMPACTS
The unit may be broken if it is toppled sideways even when properly packed. Continuous vibration may shift the gap of the panel, and the unit may not be able to display images properly. Ensure that the unit is carried by at least 2 persons and pay careful attention not to exert any vibration or impact on it.

(4) DO NOT PLACE EQUIPMENT HORIZONTALLY
Ensure that it is placed upright and not horizontally during transportation and storage as the LCD panel is very vulnerable to lateral impacts and may break. During transportation, ensure that the unit is loaded along the traveling direction of the vehicle, and avoid stacking them on one another. For storage, ensure that they are stacked in 2 layers or less even when placed upright.

1.3.2 OPTICAL FILTER (ON THE FRONT OF THE LCD PANEL)

(1) Avoid placing the unit under direct sunlight over a prolonged period of time. This may cause the optical filter to deteriorate in quality and color.

(2) Clean the filter surface by wiping it softly and lightly with a soft and lightly fuzz cloth (such as outing flannel).

(3) Do not use solvents such as benzene or thinner to wipe the filter surface. This may cause the filter to deteriorate in quality or the coating on the surface to come off. When cleaning the filter, usually use the neutral detergent diluted with water. When cleaning the dirty filter, use water-diluted ethanol.

(4) Since the filter surface is fragile, do not scratch or hit it with hard materials. Be careful enough not to touch the front surface, especially when taking the unit out of the packing case or during transportation.

1.3.3 PRECAUTIONS FOR REPLACEMENT OF EXTERIOR PARTS

Take note of the following when replacing exterior parts (REAR COVER, FRONT PANEL, etc.):

(1) Do not exert pressure on the front of the LCD panel (filter surface). It may cause irregular color.

(2) Pay careful attention not to scratch or stain the front of the LCD panel (filter surface) with hands.

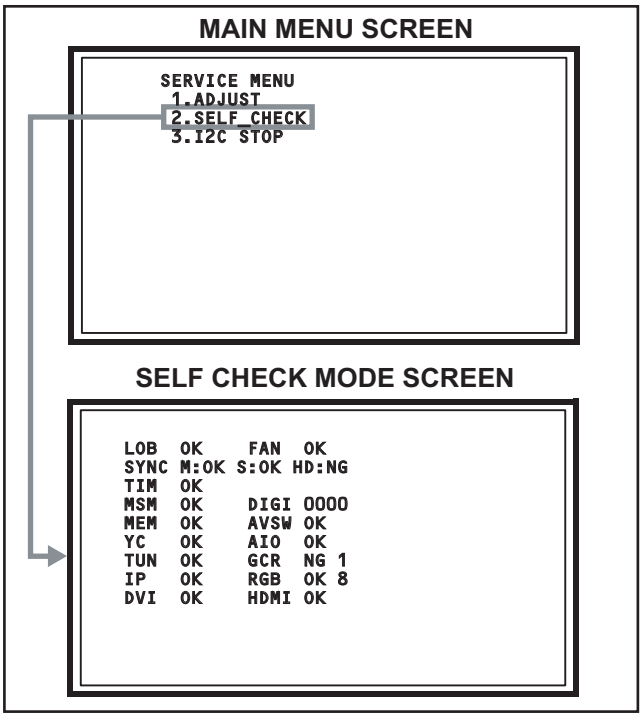
(3) When replacing exterior parts, the front (LCD panel) should be placed facing downward. Place a mat, etc. underneath to avoid causing scratches to the front (filter surface).

SECTION 2
SPECIFIC SERVICE INSTRUCTIONS

2.1 SYSTEM SETTEING

Be sure to carry out the following operation at the end of the procedure.

(1) Set to 0 minutes using the **[SLEEP TIMER]** key.
(2) Press the **[VIDEO STATUS]** key and **[DISPLAY]** key simultaneously, then enter the SERVICE MODE.
(3) When the Main Menu is displayed, press **[2]** key to enter the self check mode.
(4) Turn off the power by pressing the **[POWER]** key on the remote control unit.



2.2 FEATURES

D.I.S.T. (Digital Image Scaling Technology)
This system uses line interpolation to double the number of scanning lines and achieve high resolution, flicker-free picture.

SMART CAPTION
Smart caption will appear when you press the MUTING button, only on channels where the broadcast contains CLOSED CAPTION information.

SMART SOUND
Decreases high sound levels, giving a regulated sound level.

VIDEO STATUS
Expression of a favorite screen can be chosen by the VIDEO STATUS function.
[STANDARD ↔ DYNAMIC ↔ THEATER ↔ GAME]

DIGITAL INPUT
Digital-in will display when any picture signal (480i/ 480p, 720p/ 1080i) in Digital-in is displayed.

V-CHIP
Since the V-CHIP is built in, it can choose, view and listen to a healthy program.

MTS STEREO
The voice multiplex function of the MTS system is built in. (MTS = Multi channel Television Sound system)

NATURAL CINEMA
Watching the movie or animation, press the Natural Cinema to adjust the out line of the images to make thin more sharp.

BBE
High definition audio adds natural, clear and extraordinary sound quality to any program.

VIDEO INPUT LABEL
This function is used to label video input connections for the onscreen displays.

A.H.S.
Adds a more spacious surround sound. Music gives basic effect and Movie for more effect.

2.3 TECHNICAL INFORMATION

2.3.1 LCD PANEL

This unit uses the flat type panel LCD (Liquid Crystal Display) panel that occupies as little space as possible, instead of the conventional CRT (Cathode Ray Tube), as a display unit.
Since the unit has the two polarizing filter that are at right angles to each other, the unit adopts "normally black" mode, where light does not pass through the polarizing filter and the screen is black when no voltage is applied to the liquid crystals.

2.3.1.1 SPECIFICATIONS

The following table shows the specifications of this unit.

Item	Specifications
Maximum dimensions (W × H × D)	952 mm × 551 mm × 51 mm
Weight	10.5 kg
Effective screen size	Diagonal: 1018 mm (H: 885 mm × V : 497 mm) / 40 V
Aspect ratio	16 : 9
Drive device / system	a-Si-TFT, active matrix system
Resolution	Horizontally 1366 × Vertically 768 × RGB <W-XGA> / 3147264 dots in total
Pixel pitch (pixel size)	H: 0.648mm, V: 0.216mm
Displayed color	16777216 colors / 256 colors for R, G, and B
Brightness	500 cd/m^2
Contrast ratio	800 : 1
Response time	8 ms
View angle	Horizontally: 170°, Vertically: 170°
Surface polarizer	Anti-Glare type, Low reflective coat
Color filter	Vertical stripe
Backlight	Cold cathode fluorescent lamp × 20
Power supply voltage in LCD	6.5 V
Power supply voltage in inverter	24 V
Panel interface system	LVDS (Low Voltage Differential Signaling)

2.3.1.2 PIXEL FAULT

There are three pixel faults - bright fault , dark fault and flicker fault - that are respectively defined as follows.

(1) BRIGHT FAULT

In this pixel fault, a cell that should not light originally is lighting on and off.
For checking this pixel fault, input ALL BLACK SCREEN and find out the cell that is lighting on and off.

(2) DARK FAULT

In this pixel fault, a cell that should light originally is not lighting or lighting with the brightness twice as brighter as originally lighting.
For checking this pixel fault, input 100% of each R/G/B colour and find out the cell that is not lighting.

(3) FLICKER FAULT

In the pixel fault, a cell that should light originally or not light originally is flashing on and off.
For checking this pixel fault, input ALL BLACK SCREEN signal or 100% of each RGB colour and find out the cell that is flashing on and off.

2.3.2 MAIN CPU PIN FUNCTION [IC7601 : DIGITAL SIGNAL PWB ASS'Y]

Pin	Pin name	I/O	Function	Pin	Pin name	I/O	Function
1	VHOLD1	I	Data slice for main screen closed caption	51	NC	O	Not used
2	HFLT1	I/O	LPF for main screen closed caption video input	52	NC	O	Not used
3	NC	O	Not used	53	NC	O	Not used
4	NC	O	Not used	54	NC	O	Not used
5	DIGR0	O	R [0] for OSD	55	NC	O	Not used
6	TB1in	I	AC power for timer clock	56	NC	O	Not used
7	REMO	I	Remote control	57	NC	O	Not used
8	BYTE	I	Data bus width select [L = 16bit (fixed)]	58	NC	O	Not used
9	CNVss	I	CPU programming mode select [Normal = L]	59	NC	O	Not used
10	DIGG0	O	G [0] for OSD	60	NC	O	Not used
11	DIGB0	O	B [0] for OSD	61	NC	O	Not used
12	RESET	I	Reset for main CPU [Reset = L]	62	HSYNC	I	H. sync for OSD
13	Xout	O	System clock osillation (crystal) : 16MHz	63	NC	O	Not used
14	Vss	-	GND	64	VSYNC	I	V. sync for OSD
15	Xin	I	System clock osillation (crystal) : 16MHz	65	NC	O	Not used
16	Vccl	I	3.3V stand-by power supply	66	NC	O	Not used
17	OSC1	I	Clock for OSD	67	NC	O	Not used
18	OSC2	O	Not used : Clock for OSD	68	NC	O	Not used
19	INT1	I	AV COMPULINK control	69	NC	O	Not used
20	INT0	I	Request for sub(chassis) CPU communication (serial data)	70	NC	O	Not used
21	OUT1	O	Ys (blanking) for OSD	71	NC	O	Not used
22	OUT2	O	YM (transparence) for OSD	72	NC	O	Not used
23	NC	O	Not used	73	NC	O	Not used
24	NC	O	Not used	74	NC	O	Not used
25	NC	O	Not used	75	NC	O	Not used
26	NC	O	Not used	76	NC	O	Not used
27	CTA2/RTS2	O	Not used : Digital tuner control	77	NC	O	Not used
28	CLK2	O	Not used : Digital tuner control	78	NC	O	Not used
29	RxD2	I	Not used : Digital tuner control	79	NC	O	Not used
30	TxD2	O	Not used : Digital tuner control	80	NC	O	Not used
31	SDA2	I/O	Not used	81	NC	O	Not used
32	DIGR1	O	R [1] for OSD	82	NC	O	Not used
33	DIGG1	O	G [1] for OSD	83	NC	O	Not used
34	DIGB1	O	B [1] for OSD	84	WAKE	O	Reset for sub(chassis) CPU
35	TxD0	I	Data receive (serial) for external programming	85	CARD_DET	I	Card detection for ATSC digital tuner
36	RxD0	O	Data transmission (serial) for external programming	86	POWER_SW	I	Power switch (mechanical) detection
37	CLK0	I	Clock for external programming	87	NC	I/O	Data for Inter IC (serial) bus control : memory
38	RTS0	O	Busy for external programming [Operation = H]	88	NC	O	Clock for Inter IC (serial) bus control : memory
39	P5.7	I	Not used	89	DIGR2	O	R [2] for OSD
40	P5.6	O	Not used	90	DIGG2	O	G [2] for OSD
41	HOLD	I	CPU programming mode select [Normal = H]	91	DIGB2	O	B [2] for OSD
42	P5.4	O	Not used	92	NC	O	Not used
43	P5.3	O	Not used	93	KEY2	I	Key scan data for front control button (MENU/CH+/CH-) KEY2
44	P5.2	O	Not used	94	KEY1	I	Key scan data for front control button (VOL+/VOL-) KEY1
45	P5.1	O	Not used	95	VHOLD2	I	Data slice for sub screen closed caption
46	WR	O	CPU programming mode select [Normal = L]	96	HLF2	I/O	LPF for sub screen closed caption video input
47	P4.7	O	Data transmission for sub(chassis) CPU communication (serial)	97	CVIN2	I	Video(Y) for sub screen closed caption
48	P4.6	I	Data receive for sub(chassis) CPU communication (serial)	98	TVSETB	I	Test terminal [L Fixed]
49	P4.5	I	Clock for sub(chassis) CPU communication (serial)	99	VCCE	I	5V stand-by power supply
50	P4.4	O	Not used	100	CVIN1	I	Video(Y) for main screen closed caption

2.3.3 SUB (CHASSIS) CPU PIN FUNCTION [IC7001 : DIGITAL SIGNAL PWB ASS'Y]

Pin	Pin name	I/O	Function	Pin	Pin name	I/O	Function
1	LB_PRO	O	Not used	51	BS_TXD	O	Not used : Data transmission for digital tuner communication
2	P_MU	O	Picture muting [Muting = H]	52	BS_RXD	I	Not used : Data receive for digital tuner communication
3	JP_CSB	O	Not used (NC)	53	NC	O	Not used (NC)
4	A_MU	O	Audio muting [Muting = H]	54	VREF+	I	3.3V power supply
5	M_MU	O	Audio muting (for AUDIO OUT) [Muting = H]	55	PDP_TX	O	Data transmission for SUB (DRIVE) CPU communication
6	PC_SEL	O	Not used : RGB(PC) INPUT select	56	PDP_RX	I	Data receive for SUB (DRIVE) CPU communication
7	ON_TIMER	O	POWER INDICATOR (LED) brightness [LOW = L]	57	SDA0	I/O	Data for Inter IC (serial) bus : EEP-ROM (IC7002)
8	ILA0	O	LCD back light lighting	58	SCL0	O	Clock for Inter IC (serial) bus : EEP-ROM (IC7002)
9	ILA1	O	LCD panel overshoot refresh timing	59	SDA_DVI	I/O	Not used : Data for Inter IC (serial) bus for panel communication
10	ILA2	O	Not used	60	SCL_DVI	O	Not used : Clock for Inter IC (serial) bus for panel communication
11	POW_LED	O	POWER LED lighting [ON = H]	61	AVSS	-	GND
12	WORD	O	Not used	62	DIGII_PHOT	I	Photo sensor for DIGITAL-IN illegal copy protection
13	MI_CK	I	Clock for SUB (OSD) CPU communication	63	AGC	I	Not used
14	MI_TX	I	Data receive for SUB (OSD) CPU communication	64	EXT_YS1	I	Not used
15	MI_RX	O	Data transmission for SUB (OSD) CPU communication	65	EXT_YS2	I	Not used
16	MI_REQ	O	Data request for SUB (OSD) CPU communication [Request = L]	66	VDD	I	3.3V power supply
17	VDD	I	3.3V power supply	67	DIGI_PRO	O	for DIGITAL-IN (HDMI)
18	FOSC	O	Not used (NC)	68	GCR_RST	O	Not used (NC)
19	VSS	-	GND	69	GR_ON	O	Not used (NC)
20	X1	I	Not used : Low speed oscillatior	70	SYNC_SEL	O	Not used : Sync select for digital tuner
21	X0	O	Not used : Low speed oscillatior	71	NC	O	Not used (NC)
22	VDD	I	3.3V power supply	72	NC	O	Not used (NC)
23	OSC1	I	System clock osillation (crystal) : 16MHz	73	SBD5	I/O	Data for writing on board (connect CN01P : for Frash ROM type)
24	OSC0	O	System clock osillation (crystal) : 16MHz	74	SBT5	I	Clock for writing on board (connect CN01P : for Frash ROM type)
25	MODE	I	Single chip mode	75	NMI	I	3.3V power supply
26	BS1.5CTL	O	Not used : Digital tuner power / reset control	76	COMP	I	AV COMPULINK III control
27	A92RES	O	Reset for IC1001(3D YC SEP / COLOR DEMODULAT) [Reset = H]	77	REMO	I	Remote control
28	BS_RST	O	Not used: Reset for Digital tuner power / reset control	78	VSYNC	I	V. sync pulse
29	LIP_RST	O	Not used: Reset for Sound delay (Lip sync)	79	WAKE	I	Reset for sub(chassis) CPU
30	SOFT_OFF	O	Not used	80	POWERGOOD	I	Power error detection [NG = H]
31	VMUTE	I	No use : Picture muting request from digital tuner	81	NC	O	Not used (NC)
32	VOUTENB	O	No use : Video cutoff for digital tuner	82	RST	I	Reset for MAIN CPU [Reset = L]
33	MDR_CON	I	No use : System cable connection monitor for PDP	83	VDD	I	3.3V power supply
34	AVDD	I	3.3V power supply	84	SCL3A	O	Clock for Inter IC (serial) bus control
35	BS_POW	O	Not used : Digital tuner power control	85	SDA3A	I/O	Data for Inter IC (serial) bus control
36	DsyncSW2	O	Sync select for DIGITAL-IN [Cotrolled with 99-pin]	86	SCL3B	O	Clock for Inter IC (serial) bus control
37	LB_POW	O	Not used : Power control for low bias line	87	SDA3B	I/O	Data for Inter IC (serial) bus control
38	NC	O	Not used (NC)	88	DIGI_SYNCSEL	O	Not used
39	HOTPLUG	I	Not used : Video communiation monitor for receiver unit (PDP)	89	DIGI_LRSW	O	For DIGITAL-IN (HDMI)
40	MECA_SW	I	Mechanical monitor for POWER switch [Push = L]	90	DIGI_INT	I	Reset for HDMI process [Reset =]
41	MAIN_POW	O	Main power control [ON = L]	91	DVI_RST	O	Not used : Reset for DVI format conversion
42	MSP_RST	O	AUDIO OUT output mode select [VARIABLE = L]	92	VSS	-	GND
43	VREF-	I	Not used	93	SCL5055	O	Clock for Inter IC (serial) bus : JCC5055 (DIST process)
44	AFT2	I	Not used : AFT voltage for sub tuner	94	VFORMATSEL	O	Not used : Digital tuner clock control
45	AFT1	I	AFT voltage for VHF/UHF tuner	95	SDA5055	I/O	Data for Inter IC (serial) bus : JCC5055 (DIST process)
46	KEY2	I	Key scan data for front switch (MENU/CH+/CH-)	96	OSD_MODE_SEL	O	Not used : OSD mode select
47	KEY1	I	Key scan data for front switch (VOL+/VOL-)	97	NC	O	Not used (NC)
48	NC	O	Not used (NC)	98	15K/OTH	O	Main video select [Fixed H]
49	NC	O	Not used (NC)	99	DsyncSW1	O	Sync select for DIGITAL-IN [Cotrolled with 36-pin]
50	AC_IN	I	AC power pulse for timer clock	100	57 BUSY	I	Busy monitor for JCC5057 (New DIST process)

SECTION 3
DISASSEMBLY

3.1 CAUTION AT DISASSEMBLY

- **Be sure to perform the SYSTEM SETTING at the end of the procedure.**
- Make sure that the power cord is disconnected from the outlet.
- Pay special attention not to break or damage the parts.
- When removing each board, remove the connectors as required. Taking notes of the connecting points (connector numbers) makes service procedure manageable.
- Make sure that there is no bent or stain on the connectors before inserting, and firmly insert the connectors.

3.2 DISASSEMBLY PROCEDURE

3.2.1 REMOVING THE STAND (Fig.1)

(1) Remove the 1 screw **[A]**, then remove the STAND COVER.
(2) Remove the 4 screws **[B]**, then remove the STAND.

3.2.2 REMOVING THE REAR COVER (Fig.1)

- Remove the STAND.
  (1) Remove the JACK COVER (L/R).
  (2) Remove the 10 screws **[C]**, the 3 screws **[D]**, and the 2 screws **[E]**.
  (3) Remove the REAR COVER.

3.2.3 REMOVING THE REGULATOR PWB (Fig.1)

- Remove the STAND.
- Remove the REAR COVER.
  (1) Remove the 4 screws **[F]**, then remove the FAN BRACKET.
  (2) Remove the 1 screw **[G]**, then remove the POWER CORD HOLDER.
  (3) Remove the POWER CORD from the POWER PWB.
  (4) Remove the REGULATOR PWB.

3.2.4 REMOVING THE MAIN POWER PWB (Fig.1)

- Remove the STAND.
- Remove the REAR COVER.
- Remove the FAN BRACKET.
  (1) Remove the 4 screw **[H]**, then remove the MAIN POWER PWB.

3.2.5 REMOVING THE ANALOG SYGNAL PWB (Fig.1)

- Remove the STAND.
- Remove the REAR COVER.
- Remove the FAN BRACKET.
  (1) Remove the 6 screws **[J]**, then remove the TERMINAL BASE.
  (2) Remove the 5 screws **[K]**, then remove the ANALOG SIGNAL PWB.

3.2.6 REMOVING THE FRONT CONTROL PWB (Fig.1)

- Remove the STAND.
- Remove the REAR COVER.
  (1) Remove the 3 screws **[L]**, then remove the CONTROL ASSY with the FRONT CONTROL PWB.
  (2) Remove the FRONT CONTROL PWB.

3.2.7 REMOVING THE RECEIVER PWB (Fig.1)

- Remove the STAND.
- Remove the REAR COVER.
  (1) Remove the 3 screws **[M]** and the 1 screw **[N]**, then remove the TUNER BASE.
  (2) Remove the 2 screws **[P]** and the 2 screws **[Q]**, then remove the TOP SHIELD CASE.
  (3) Remove the 2 screws **[R]**, then remove the RECEIVER PWB.

3.2.8 REMOVING THE CONNECTOR PWB (Fig.1)

- Remove the STAND.
- Remove the REAR COVER.
- Remove the TOP SHIELD CASE.
  (1) Remove the 4 screws **[S]**, then remove the RECEIVER PWB BRACKET.
  (2) Remove the 1 screw **[T]**, then remove the CONNECTOR PWB.

3.2.9 REMOVING THE COOLING FAN (Fig.1)

- Remove the STAND.
- Remove the REAR COVER.
- Remove the TOP SHIELD CASE.
  (1) Remove the 5 screws **[U]** and the 3 screws **[V]**, then remove the SHIELD COVER with COOLING FAN.
  (2) Remove the 2 ribets **[W]**, then the remove the COOLING FAN.

3.2.10 REMOVING THE ATSC TUNER MODULE PWB (Fig.1)

- Remove the STAND.
- Remove the REAR COVER.
- Remove the TUNER BASE.
- Remove the TOP SHIELD CASE.
- Remove the SHIELD COVER.
  (1) Remove the 5 screws **[X]**, then remove the DIGITAL TUNER UNIT.

3.2.11 REMOVING THE DIGITAL SIGNAL PWB (Fig.1)

- Remove the STAND.
- Remove the REAR COVER.
- Remove the TUNER BASE.
- Remove the TOP SHIELD CASE.
- Remove the SHIELD COVER.
- Remove the ATSC TUNER MODULE PWB.
  (1) Remove the 3 screws **[Y]**, then remove the DIGITAL BRACKET.
  (2) Remove the DIGITAL SIGNALPWB.

3.2.12 REMOVING THE SD CARD PWB (Fig.1)

- Remove the STAND.
- Remove the REAR COVER.
  (1) Remove the 2 screws **[Z]**, then remove the SD CARD PWB.

3.2.13 REMOVING THE SUB POWER PWB (Fig.1)

- Remove the STAND.
- Remove the REAR COVER.
- Remove the FAN BRACKET.
  (1) Remove the 2 screws **[A']**, then remove the SUB POWER PWB BRACKET with SUB POWER PWB.
  (2) Remove the 3 screws **[B']**, then remove the SUB POWER PWB.

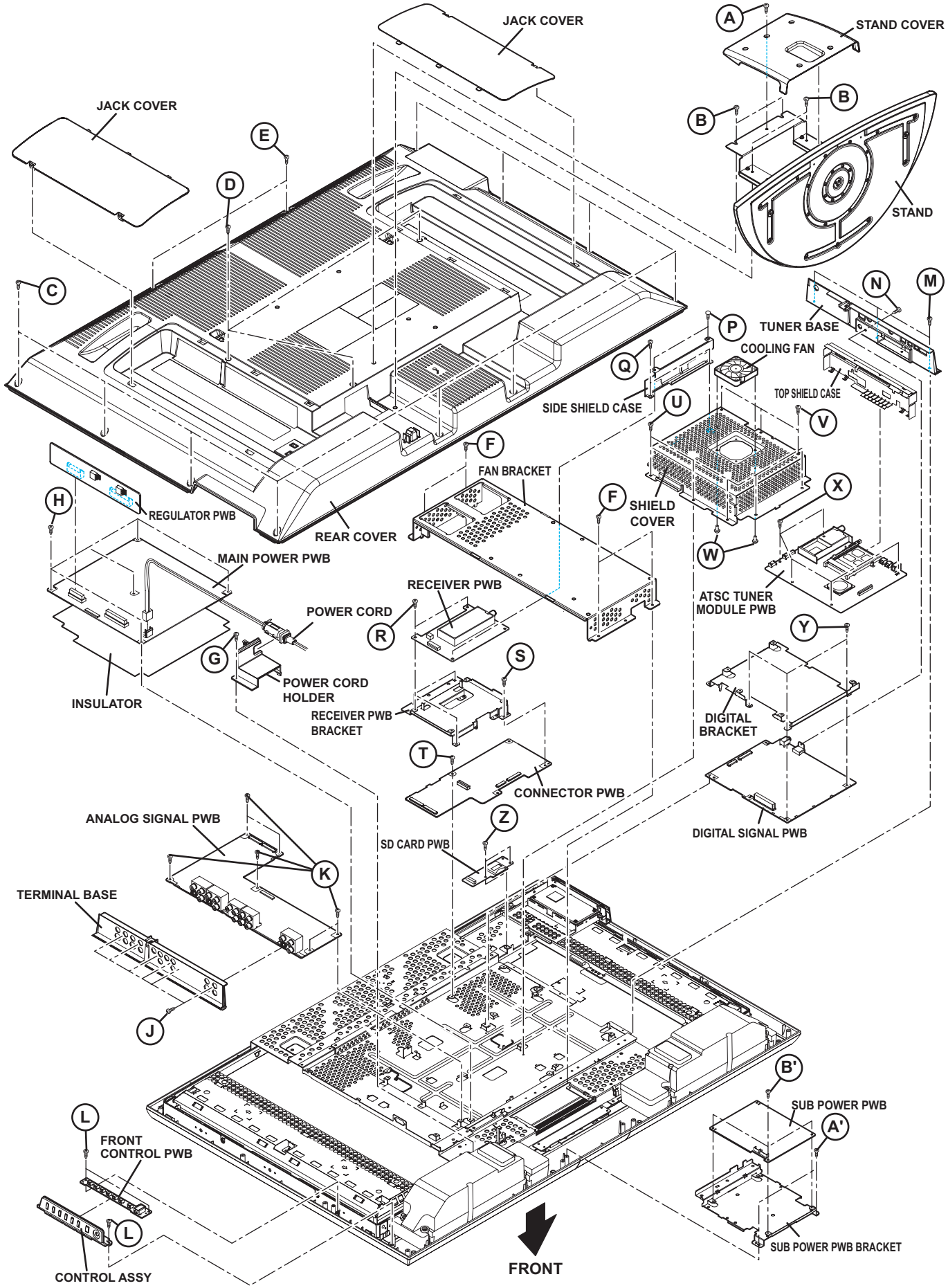

JACK COVER
JACK COVER
A
STAND COVER
B
B
STAND
E
D
C
N
M
P
TUNER BASE
COOLING FAN
Q
TOP SHIELD CASE
SIDE SHIELD CASE
U
V
F
FAN BRACKET
H
REGULATOR PWB
F
SHIELD COVER
X
REAR COVER
W
MAIN POWER PWB
ATSC TUNER MODULE PWB
RECEIVER PWB
POWER CORD
R
Y
G
S
POWER CORD HOLDER
RECEIVER PWB BRACKET
INSULATOR
DIGITAL BRACKET
T
CONNECTOR PWB
ANALOG SIGNAL PWB
Z
SD CARD PWB
DIGITAL SIGNAL PWB
K
TERMINAL BASE
J
B'
SUB POWER PWB
L
A'
FRONT CONTROL PWB
L
SUB POWER PWB BRACKET
CONTROL ASSY
FRONT

Fig.1

3.2.14 REMOVING THE SPEAKER (Fig.2)

- Remove the STAND.
- Remove the REAR COVER.
  (1) Remove the 6 screws **[A]**, then remove the SPEAKER (L /R).

NOTE:

- Since the speaker is attached in a certain direction, attach the speaker in the same correct direction as it has been attached.
- When the speaker is decomposed, the performance cannot be kept.

3.2.15 REMOVING THE FRONT LED PWB (Fig.2)

- Remove the STAND.
- Remove the REAR COVER.
- Remove the FAN BRACKET.
- Remove the SUB POWER PWB BRACKET.
  (1) Remove the 2 screws **[B]**, then remove the FRONT LED PWB.

3.2.16 REMOVING THE LED LENS (Fig.2)

- Remove the STAND.
- Remove the REAR COVER.
- Remove the FAN BRACKET.
- Remove the SUB POWER PWB BRACKET.
- Remove the FRONT LED PWB.
  (1) Remove the 2 screws **[M]**, then remove the LED LENS.

3.2.17 REMOVING THE CARD PWB (Fig.2)

- Remove the STAND.
- Remove the REAR COVER.
  (1) Remove the 2 screws **[C]**, then remove the CARD BASE.
  (2) Remove the 1 screw **[D]**, then remove the CARD PWB BRACKET with CARD PWB.
  (3) Remove the 4 screws **[E]**, then remove the CARD PWB.

3.2.18 REMOVING THE LCD PANEL UNIT (Fig.2)

- Remove the STAND.
- Remove the REAR COVER.
- Remove the FAN BRACKET.
- Remove the CARD PWB BRACKET.
  (1) Remove the 2 screws **[F]**, then remove the MAIN BASE.
  (2) Remove the 4 screws **[G]** and the 2 screw **[H]**, then remove the TOP FRAME.
  (3) Remove the 2 screws **[J]** and the 2 screws **[K]**, then remove the BOTTOM FRAME.
  (4) Remove the 2 screws **[L]**, then remove the SUB BRACKET.
  (5) Remove the LCD PANEL UNIT from the FRONT PANEL.

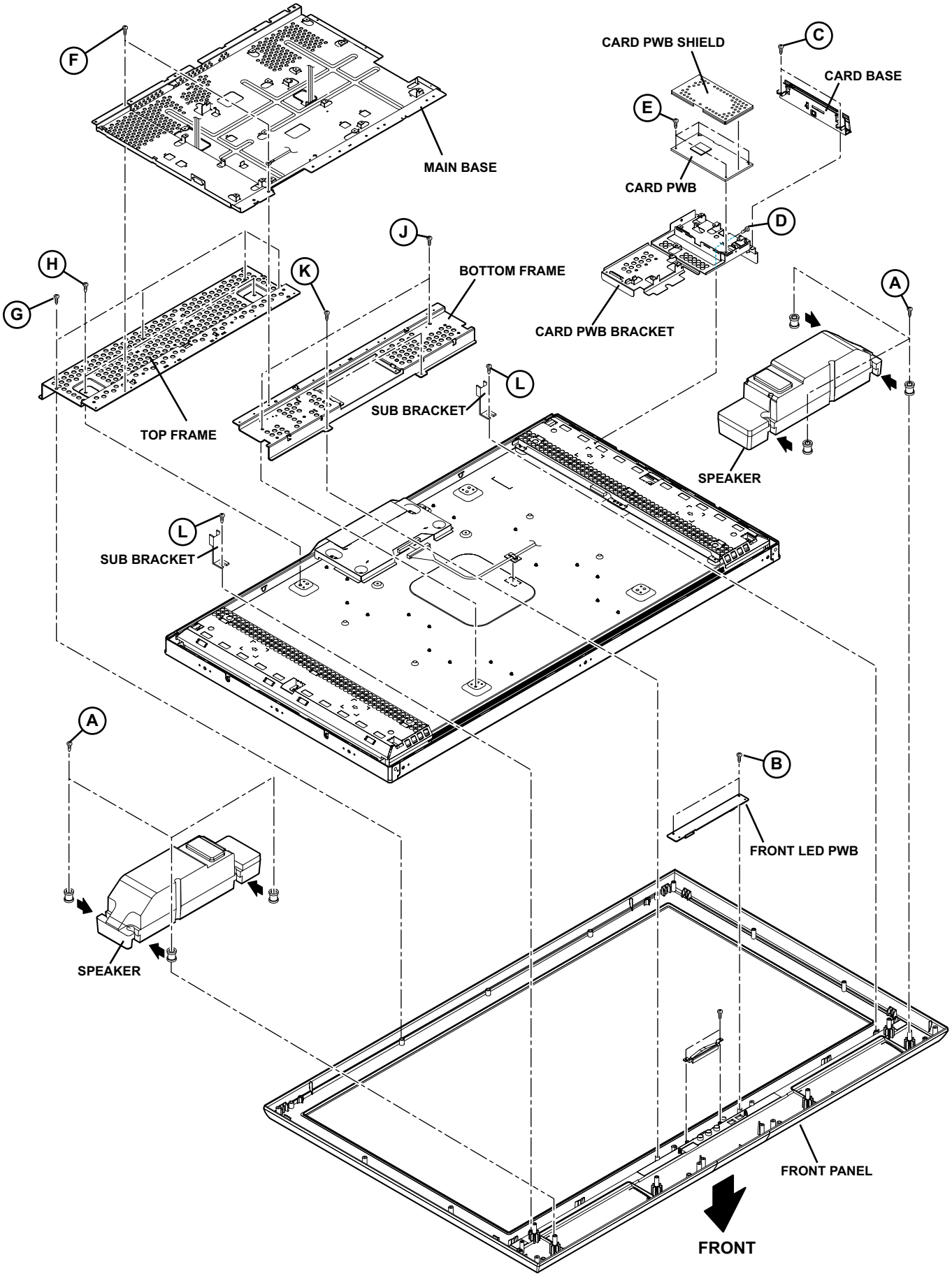

F
MAIN BASE
CARD PWB SHIELD
C
CARD BASE
E
CARD PWB
D
J
BOTTOM FRAME
H
G
K
TOP FRAME
CARD PWB BRACKET
A
L
SUB BRACKET
SPEAKER
L
SUB BRACKET
A
B
FRONT LED PWB
SPEAKER
FRONT PANEL
FRONT

Fig.2

3.3 MEMORY IC REPLACEMENT

- This model uses the memory IC.
- This memory IC stores data for proper operation of the video and drive circuits.
- When replacing, be sure to use an IC containing this (initial value) data.

3.3.1 MEMORY IC REPLACEMENT PROCEDURE

1. Power off
Switch off the power and disconnect the power plug from the AC outlet.

2. Replace the memory IC
Be sure to use the memory IC written with the initial setting values.

3. Power on
Connect the power plug to the AC outlet and switch on the power.

4. Receiving channel setting
Refer to the OPERATING INSTRUCTIONS and set the receive channels (Channels Preset) as described.

5. User setting
Check the user setting items according to the given in page later. Where these do not agree, refer to the OPERATING INSTRUCTIONS and set the items as described.

6. SERVICE MODE setting
Verify what to set in the SERVICE MODE, and set whatever is necessary (Fig.1). Refer to the SERVICE ADJUSTMENT for setting.

3.3.2 SERVICE MODE SETTING

■SERVICE MODE SCREEN

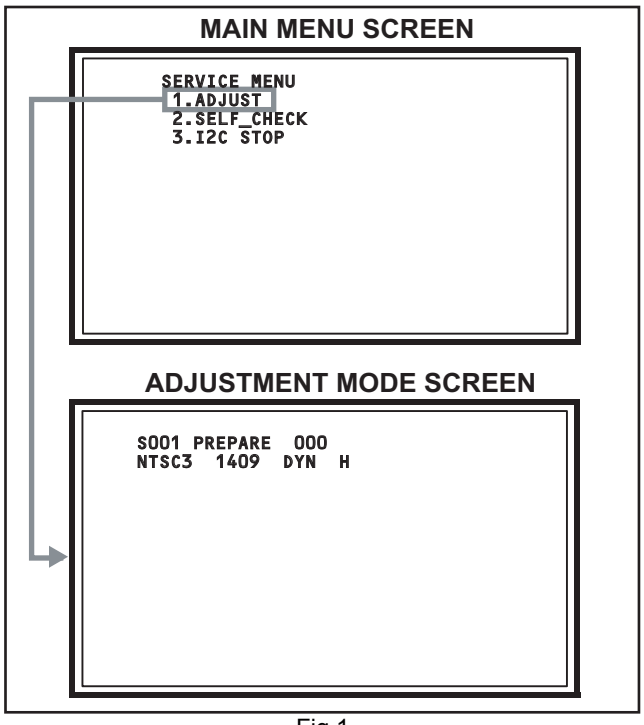


Fig.1

■SETTING ITEM

Setting items	Settings	Item No.
Video sytetem setting	Adjust	S001 to S039
Audio sytetem setting	Adjust	T001 to T010
Panel control sytetem setting	Fixed	P001 to P010
Drive sytetem setting	Fixed	D001 to D187
Main cpu system setting	Fixed	Z001 to Z010

3.3.3 SETTINGS OF FACTORY SHIPMENT

3.3.3.1 BUTTON OPERATION

Setting item	Setting position
POWER	Off
CHANNEL	CABLE-02
VOLUME	10

3.3.3.2 REMOTE CONTROL DIRECT OPERATION

Setting item		Setting position
INPUT		TV
CHANNEL		CABLE-02
VOLUME		10
MUTING		OFF
DISPLAY		OFF
ASPECT	NTSC	PANORAMA
	HD / ATSC	FULL
SLEEP TIMER		OFF
THEATER PRO		OFF
NATURAL CINEMA		AUTO
VIDEO STATUS		DYNAMIC
MTS		STEREO
SOUND EFFECT	A.H.S	OFF
	BBE	ON
	SMART SOUND	OFF
	A.H.B	OFF

3.3.3.3 REMOTE CONTROL MENU OPERATION

1. PICTURE ADJUST

Customers can adjust the picture setting of menu screen as their own like but the picture standard value during factory shipment is as below.

< NTSC MODE >

Setting item	DYNAMIC	STANDARD	GAME	THEATER
PICTURE	00	00	00	00
BRIGHT	00	00	00	00
COLOR	+10	00	-10	00
TINT	00	00	00	00
DETAIL	+05	00	00	00
ENERGY SAVER MODE	+30	+20	00	-10
COLOR TEMPERATURE	HIGH	LOW	HIGH	HIGH
DIG. NOISE CLEAR	OFF	OFF	OFF	OFF
COLOR MANAGEMENT	ON	ON	ON	ON
DYNAMIC GAMMA	ON	ON	ON	ON
SMART PICTURE	ON	ON	ON	ON

< HD MODE >

Setting item	DYNAMIC	STANDARD	GAME	THEATER
PICTURE	00	00	00	00
BRIGHT	00	00	00	00
COLOR	+05	00	-10	00
TINT	00	00	00	00
DETAIL	+05	00	00	00
ENERGY SAVER MODE	+30	+20	00	-10
COLOR TEMPERATURE	HIGH	LOW	HIGH	HIGH
DIG. NOISE CLEAR	OFF	OFF	OFF	OFF
COLOR MANAGEMENT	ON	ON	ON	ON
DYNAMIC GAMMA	ON	ON	ON	ON

2. SOUND ADJUST

Setting item	Setting position
BASS	00
TREBLE	00
BALANCE	00

3. CLOCK / TIMERS

Setting item	Setting position
ON / OFF TIMER	OFF

4. INITIAL SETUP

Setting item	Setting position
VIDEO-1 MONITOR OUT	OFF
DIGITAL-IN	AUTO
DIGITAL-AUDIO	DIGITAL
NOISE MUTING	ON
FRONT PANEL LOCK	OFF
V1 SMART INPUT	OFF
VIDEO INPUT LABEL	All blank
POSITION ADJUSTMENT	Center
POWER INDICATOR	HIGH
ILLUMINATION	LOW
LANGUAGE	ENG.
CLOSED CAPTION	OFF(CC1/T1)
AUTO SHUT OFF	OFF
XDS ID	ON
V-CHIP	OFF
AUTO DEMO	OFF

3.4 REPLACEMENT OF CHIP COMPONENT

3.4.1 CAUTIONS

(1) Avoid heating for more than 3 seconds.
(2) Do not rub the electrodes and the resist parts of the pattern.
(3) When removing a chip part, melt the solder adequately.
(4) Do not reuse a chip part after removing it.

3.4.2 SOLDERING IRON

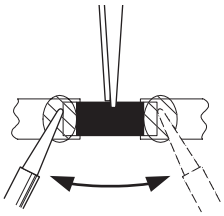
(1) Use a high insulation soldering iron with a thin pointed end of it.
(2) A 30w soldering iron is recommended for easily removing parts.

3.4.3 REPLACEMENT STEPS

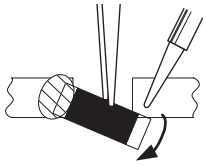
1. How to remove Chip parts

[Resistors, capacitors, etc.]

(1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.



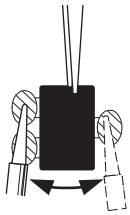
(2) Shift with the tweezers and remove the chip part.



[Transistors, diodes, variable resistors, etc.]

(1) Apply extra solder to each lead.

(2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.



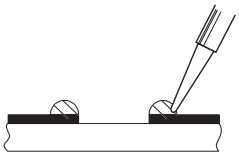
NOTE :

After removing the part, remove remaining solder from the pattern.

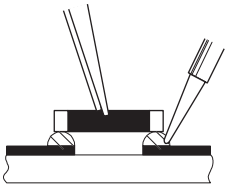
2. How to install Chip parts

[Resistors, capacitors, etc.]

(1) Apply solder to the pattern as indicated in the figure.

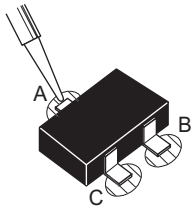


(2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

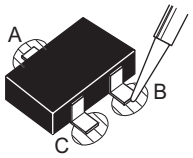


[Transistors, diodes, variable resistors, etc.]

(1) Apply solder to the pattern as indicated in the figure.
(2) Grasp the chip part with tweezers and place it on the solder.
(3) First solder lead **A** as indicated in the figure.



(4) Then solder leads **B** and **C**.



SECTION 4
ADJUSTMENT

4.1 ADJUSTMENT PREPARATION

(1) **There are 2 ways of adjusting this TV : One is with the REMOTE CONTROL UNIT and the other is the conventional method using adjustment parts and components.**
(2) **The adjustment using the REMOTE CONTROL UNIT is made on the basis of the initial setting values. The setting values which adjust the screen to the optimum condition can be different from the initial setting values.**
(3) Make sure that connection is correctly made AC to AC power source.
(4) Turn on the power of the TV and measuring instruments for warning up for at least 30 minutes before starting adjustments.
(5) If the receive or input signal is not specified, use the most appropriate signal for adjustment.
(6) Never touch the parts (such as variable resistors, transformers and condensers) not shown in the adjustment items of this service adjustment.

4.2 PRESET SETTING BEFORE ADJUSTMENTS

Unless otherwise specified in the adjustment items, preset the following functions with the REMOTE CONTROL UNIT.

Setting item	Settings
VIDEO STATUS	STANDARD
BRIGHT / CONTRAST / COLOR / TINT	00
COLOR TEMPERATURE	LOW
DIG. NOISE CLEAR	OFF
COLOR MANAGEMENT	ON
NATURAL CINEMA	OFF
TREBLE / BASS / BALANCE	00
SMART SOUND	OFF
MTS	STEREO
BBE	OFF
A.H.S	OFF
A.H.B	OFF
ASPECT	FULL

4.3 MEASURING INSTRUMENT AND FIXTURES

- Oscilloscope
- Signal generator (Pattern generator) [NTSC / 525i / 525p / 750p / 1125i]
- TV audio multiplex signal generator
- Remote control unit

4.4 ADJUSTMENT ITEMS

■ **VIDEO CIRCUIT**
- 525i A-D OFFSET adjustment
- 1125i BRIGHTNESS adjustment
- 1125i A-D OFFSET adjustment
- SUB SCREEN A-D OFFSET adjustment
- WHITE BALANCE (HIGHLIGHT) adjustment

■ **MTS CIRCUIT**
- MTS INPUT LEVEL adjustment
- MTS SEPARATION adjustment

4.5 BASIC OPERATION OF SERVICE MODE

4.5.1 HOW TO ENTER THE SERVICE MODE

(1) Set to 0 minutes using the **[SLEEP TIMER]** key.
(2) Press the **[VIDEO STATUS]** key and **[DISPLAY]** key simultaneously, then enter the SERVICE MODE (Fig.1)

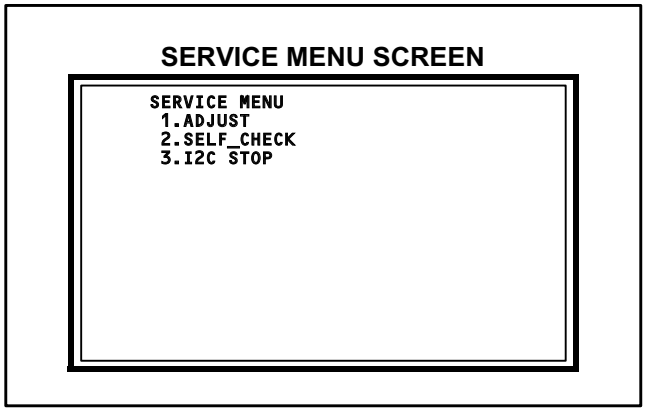


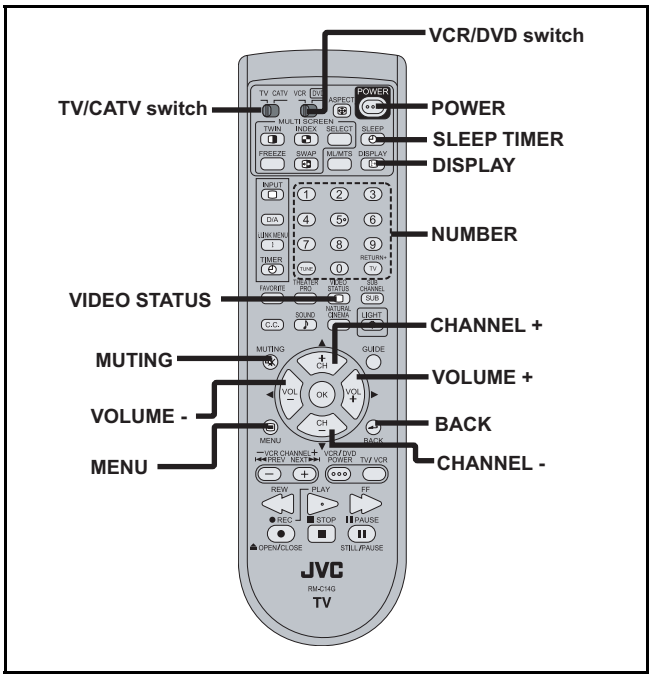
Fig.1

NOTE:
- Before entering the SERVICE MODE, confirm that the setting of **TV/CATV** switch of the REMOTE CONTROL UNIT is at the "TV" side and the setting of **VCR/DVD** switch is at the "**VCR**" side. If the switches have not been properly set, you cannot enter the SERVICE MODE.
- When a number key other than the **[1]** keys is pressed in the SERVICE MENU SCREEN, the other relevant screen may be displayed.
  This is not used in the adjustment procedure. Press the **[MENU]** key to return to the SERVICE MENU SCREEN.

4.5.2 HOW TO EXIT THE SERVICE MODE

Press the [BACK] key to exit the Service mode.

4.5.3 SERVICE MODE SELECT KEY LOCATION



4.5.4 ADJUSTMENT MODE

This mode is used to adjust the VIDEO CIRCUIT and the MTS CIRCUIT.

4.5.4.1 HOW TO ENTER THE ADJUSTMENT MODE

When the SERVICE MENU SCREEN of SERVICE MODE is displayed, press **[1]** key to enter the **ADJUSTMENT MODE (Fig.2)**.

4.5.4.2 DESCRIPTION OF STATUS DISPLAY OF ADJUSTMENT MODE

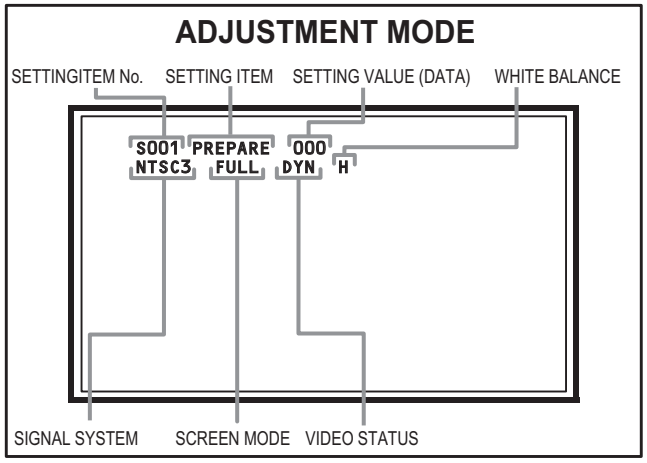


Fig.2

(1) SIGNAL SYSTEM

The signal displayed on the screen is displayed.

NTSC3	: 525i (Composite / S-video input)
525I	: 525i (Component input)
525P	: 525p
1125I6	: 1125i
750P	: 750p
H525I	: HDMI 525i
H525P	: HDMI 525p
H125I6	: HDMI 1125i
H750P	: HDMI 750p
D525I	: Digital 525i
D525P	: Digital 525p
D125I6	: Digital 1125i

(2) SCREEN MODE

State of the SCREEN SIZE or MULTI PICTURE is displayed.

SINGLE SCREEN

FULL	: FULL
1609	: CINEMA, CINEMA ZOOM
PANO	: PANORAMA, HD PANORAMA
REGU	: REGULAR

MULTI SCREEN

M2	: TWIN, FREEZE screen
M12	: INDEX screen

(3) VIDEO STATUS

STD	: STANDARD
DYN	: DYNAMIC
TH	: THEATER
GAME	: GAME

(4) WHITE BALANCE

H	: HIGH
L	: LOW

(5) SETTING ITEM NAME

Setting item name are displayed. The setting item numbers to be displayed are listed below.

Item No.	Setting item
S001 - S039	Video system setting
T001 - T010	Audio system setting
P001 - P010	Panel control system setting
D001 - D187	Drive system setting
Z001 - Z010	Main CPU system setting

(6) SETTING ITEM NO.

Setting item numbers are displayed. For the setting item names to be displayed, refer to "Initial setting value of adjustment mode".

(7) SETTING VALUE (DATA)

The SETTING VALUE is displayed.

4.5.4.3 CHANGE AND MEMORY OF SETTING VALUE

■SELECTION OF SETTING ITEM

- **[CH+]** / **[CH-]** key.
  Change the setting items up/ down.

  S001... ↔ T001... ↔ P001... ↔ D001... ↔ Z001...

- **[SLEEP TIMER]** key.
  Switches to the next items.

  S001 → T001 → P001 → D001 → Z001

■CHANGE OF SETTING VALUE (DATA)

- **[VOL+]** / **[VOL-]** key.
  Change the setting values up/down.

■MEMORY OF SETTING VALUE (DATA)

Changed setting value is memorized by pressing **[MUTING]** key.

4.6 INITIAL SETTING VALUES IN THE SERVICE MODE

- Perform fine-tuning based on the "initial values" using the remote control when in the Service mode.
- The "initial values" serve only as an indication rough standard and therefore the values with which optimal display can be achieved may be different from the default values. But, don't change the values that are not written in "ADJUSTMENT PROCEDURE". They are fixed values.

4.6.1 VIDEO SYSTEM SETTING

Item No.	Item name	Variable range	Setting value
S001	PREPARE	000 - 031	000
S002	NTSC BL	000 - 015	000
S003	NTSC CNT	000 - 255	036
S004	NT CR OF	000 - 015	006
S005	NT CB OF	000 - 015	006
S006	525i BL	000 - 015	000
S007	525i CNT	000 - 255	044
S008	5i CB OF	000 - 015	000
S009	5i CR OF	000 - 015	000
S010	5i CR GN	000 - 015	006
S011	5i CB GN	000 - 015	006
S012	HD BL	000 - 063	056
S013	HD CB OF	000 - 063	055
S014	HD CR OF	000 - 063	058
S015	RT CONT	000 - 015	007
S016	RT CB OF	000 - 015	005
S017	RT CR OF	000 - 015	007
S018	RT CL GA	000 - 015	012
S019	PC CL MB	000 - 007	000
S020	PC CL LB	000 - 031	000
S021	PC CL MR	000 - 071	000
S022	PC CL LR	000 - 031	000
S023	(Not display)	000 - 255	000
S024	(Not display)	000 - 255	000
S025	(Not display)	000 - 255	000
S026	(Not display)	000 - 255	000
S027	(Not display)	000 - 255	000
S028	(Not display)	000 - 255	000
S029	(Not display)	000 - 255	000
S030	R DRIVE	000 - 255	130
S031	G DRIVE	000 - 255	133
S032	B DRIVE	000 - 255	090
S033	(Not display)	000 - 255	000
S034	(Not display)	000 - 255	000
S035	(Not display)	000 - 255	000
S036	(Not display)	000 - 255	000
S037	(Not display)	000 - 255	000
S038	(Not display)	000 - 255	000
S039	ILA COM	+00 - +01	+00

4.6.2 AUDIO SYSTEM SETTING

Item No.	Item name	Variable range	Setting value
T001	IN LEVEL	000 - 255	009
T002	LOW SEP	000 - 255	033
T003	HIGH SEP	000 - 255	024
T004	AFC	000 - 255	+00
T005	(Not display)	000 - 255	00
T006	ATT V ON	000 - 001	000
T007	ATT U ON	000 - 001	000
T008	ATT C ON	000 - 001	000
T009	(Not display)	000 - 255	000
T010	(Not display)	000 - 255	000

4.6.3 PANEL CONTOROL SYSTEM SETTING (*Fixed values)

Item No.	Item name	Variable range	Setting value
P001	TM HOR H	00 - FF	00
P002	TM HOR L	00 - FF	00
P003	TM MIN	00 - FF	00
P004	TEMP0	000 - 255	000
P005	(Not display)	000 - 255	000
P006	(Not display)	000 - 255	000
P007	(Not display)	000 - 255	000
P008	(Not display)	000 - 255	000
P009	(Not display)	000 - 255	000
P010	(Not display)	000 - 255	000

4.6.4 DRIVE SYSTEM SETTING (*Fixed values)

Item No.	Item name	Variable range	Setting value
D001	SLV GN	00 - 3F	15
D002	SLVH GN	00 - 3F	13
D003	SLH GN	00 - 3F	15
D004	SLV Pf	00 - 03	01
D005	SLH Pf H	00 - 01	01
D006	SLH Pf L	00 - 03	01
D007	SL EGCON	00 - 3F	08
D008	SL EGONF	00 - 01	01
D009	SL CRGON	00 - 3F	06
D010	SL CRGON	00 - 01	01
D011	SL ON OF	00 - 01	01
D012	SV GN	00 - 3F	18
D013	SVH GN	00 - 3F	1A
D014	SH GN	00 - 3F	1C
D015	SV Pf	00 - 03	00
D016	SV PfH	00 - 01	01

Item No.	Item name	Variable range	Setting value
D017	SV PfL	00 - 03	00
D018	SYL CON	00 - 3F	30
D019	SYL CONF	00 - 01	01
D020	SYH CON	00 - 3F	00
D021	SYH CONF	00 - 01	01
D022	SC CON	00 - 3F	1A
D023	SC CNONF	00 - 01	01
D024	SPM BLC	00 - 3F	0A
D025	SPM BLCO	00 - 01	01
D026	SLIM	00 - 3F	20
D027	SLIMONF	00 - 01	01
D028	SCRG	00 - 3F	24
D029	SRGONF	00 - 01	01
D030	S ONF	00 - 01	01
D031	pb GN	00 - 3F	15
D032	pb PfH	00 - 01	01
D033	pb PfL	00 - 03	00
D034	pb CRG	00 - 3F	04
D035	pb CRGON	00 - 01	01
D036	pb ONF	00 - 01	01
D037	pr GN	00 - 3F	15
D038	pr PfH	00 - 01	01
D039	pr PfL	00 - 03	00
D040	pr CRG	00 - 3F	05
D041	pr CRGON	00 - 01	01
D042	pr ONF	00 - 01	01
D043	ENH ONF	00 - 01	01
D044	(Not display)	00 - FF	00
D045	(Not display)	00 - FF	00
D046	(Not display)	00 - FF	00
D047	(Not display)	00 - FF	00
D048	(Not display)	00 - FF	00
D049	(Not display)	00 - FF	00
D050	(Not display)	00 - FF	00
D051	(Not display)	00 - FF	00
D052	(Not display)	00 - FF	00
D053	(Not display)	00 - FF	00
D054	(Not display)	00 - FF	00
D055	(Not display)	00 - FF	00
D056	(Not display)	00 - FF	00
D057	(Not display)	00 - FF	00
D058	(Not display)	00 - FF	00
D059	(Not display)	00 - FF	00
D060	(Not display)	00 - FF	00
D061	(Not display)	00 - FF	00
D062	(Not display)	00 - FF	00

Item No.	Item name	Variable range	Setting value
D063	(Not display)	00 - FF	00
D064	(Not display)	00 - FF	00
D065	(Not display)	00 - FF	00
D066	(Not display)	00 - FF	00
D067	(Not display)	00 - FF	00
D068	(Not display)	00 - FF	00
D069	(Not display)	00 - FF	00
D070	(Not display)	00 - FF	00
D071	(Not display)	00 - FF	00
D072	(Not display)	00 - FF	00
D073	(Not display)	00 - FF	00
D074	(Not display)	00 - FF	00
D075	(Not display)	00 - FF	00
D076	(Not display)	00 - FF	00
D077	(Not display)	00 - FF	00
D078	(Not display)	00 - FF	00
D079	(Not display)	00 - FF	00
D080	(Not display)	00 - FF	00
D081	(Not display)	00 - FF	00
D082	(Not display)	00 - FF	00
D083	(Not display)	00 - FF	00
D084	(Not display)	00 - FF	00
D085	(Not display)	00 - FF	00
D086	(Not display)	00 - FF	00
D087	(Not display)	00 - FF	00
D088	(Not display)	00 - FF	00
D089	(Not display)	00 - FF	00
D090	(Not display)	00 - FF	00
D091	(Not display)	00 - FF	00
D092	(Not display)	00 - FF	00
D093	(Not display)	00 - FF	00
D094	(Not display)	00 - FF	00
D095	(Not display)	00 - FF	00
D096	(Not display)	00 - FF	00
D097	(Not display)	00 - FF	00
D098	(Not display)	00 - FF	00
D099	(Not display)	00 - FF	00
D101	(Not display)	00 - FF	00
D102	(Not display)	00 - FF	00
D103	(Not display)	00 - FF	00
D104	(Not display)	00 - FF	00
D105	(Not display)	00 - FF	00
D106	(Not display)	00 - FF	00
D107	(Not display)	00 - FF	00
D108	(Not display)	00 - FF	00
D109	(Not display)	00 - FF	00

Item No.	Item name	Variable range	Setting value
D110	(Not display)	00 - FF	00
D111	(Not display)	00 - FF	00
D112	(Not display)	00 - FF	00
D113	(Not display)	00 - FF	00
D114	(Not display)	00 - FF	00
D115	(Not display)	00 - FF	00
D116	(Not display)	00 - FF	00
D117	(Not display)	00 - FF	00
D118	(Not display)	00 - FF	00
D119	(Not display)	00 - FF	00
D120	(Not display)	00 - FF	00
D121	(Not display)	00 - FF	00
D122	(Not display)	00 - FF	00
D123	(Not display)	00 - FF	00
D124	(Not display)	00 - FF	00
D125	(Not display)	00 - FF	00
D126	(Not display)	00 - FF	00
D127	(Not display)	00 - FF	00
D128	(Not display)	00 - FF	00
D129	(Not display)	00 - FF	00
D130	(Not display)	00 - FF	00
D131	(Not display)	00 - FF	00
D132	(Not display)	00 - FF	00
D133	(Not display)	00 - FF	00
D134	(Not display)	00 - FF	00
D135	(Not display)	00 - FF	00
D136	(Not display)	00 - FF	00
D137	(Not display)	00 - FF	00
D138	(Not display)	00 - FF	00
D139	(Not display)	00 - FF	00
D140	(Not display)	00 - FF	00
D141	(Not display)	00 - FF	00
D142	(Not display)	00 - FF	00
D143	(Not display)	00 - FF	00
D144	(Not display)	00 - FF	00
D145	(Not display)	00 - FF	00
D146	(Not display)	00 - FF	00
D147	(Not display)	00 - FF	00
D148	(Not display)	00 - FF	00
D149	(Not display)	00 - FF	00
D150	(Not display)	00 - FF	00
D151	(Not display)	00 - FF	00
D152	(Not display)	00 - FF	00
D153	(Not display)	00 - FF	00
D154	(Not display)	00 - FF	00
D155	(Not display)	00 - FF	00

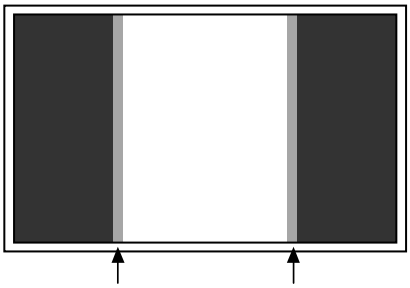
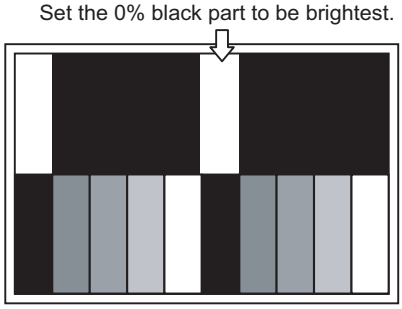
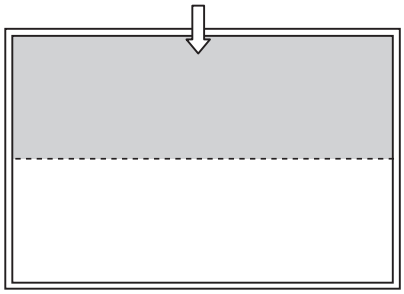
Item No.	Item name	Variable range	Setting value
D156	(Not display)	00 - FF	00
D157	(Not display)	00 - FF	00
D158	(Not display)	00 - FF	00
D159	(Not display)	00 - FF	00
D160	(Not display)	00 - FF	00
D161	(Not display)	00 - FF	00
D162	(Not display)	00 - FF	00
D163	(Not display)	00 - FF	00
D164	(Not display)	00 - FF	00
D165	(Not display)	00 - FF	00
D166	(Not display)	00 - FF	00
D167	(Not display)	00 - FF	00
D168	(Not display)	00 - FF	00
D169	(Not display)	00 - FF	00
D170	(Not display)	00 - FF	00
D171	(Not display)	00 - FF	00
D172	(Not display)	00 - FF	00
D173	(Not display)	00 - FF	00
D174	(Not display)	00 - FF	00
D175	(Not display)	00 - FF	00
D176	(Not display)	00 - FF	00
D177	(Not display)	00 - FF	00
D178	(Not display)	00 - FF	00
D179	(Not display)	00 - FF	00
D180	(Not display)	00 - FF	00
D181	(Not display)	00 - FF	00
D182	(Not display)	00 - FF	00
D183	(Not display)	00 - FF	00
D184	(Not display)	00 - FF	00
D185	(Not display)	00 - FF	00
D186	(Not display)	00 - FF	00
D187	(Not display)	00 - FF	00

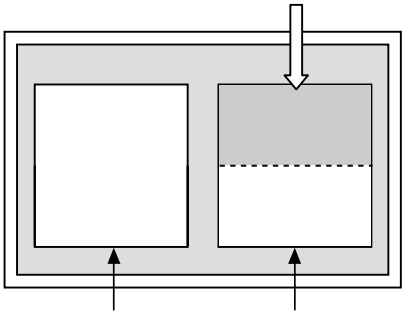
4.6.5 MAIN CPU SYETEM SETTING (*Fixed values)

Item No.	Item name	Variable range	Setting value
Z001	(Not display)	00 - FF	00
Z002	(Not display)	00 - FF	00
Z003	(Not display)	00 - FF	00
Z004	(Not display)	00 - FF	00
Z005	(Not display)	00 - FF	00
Z006	(Not display)	00 - FF	00
Z007	(Not display)	00 - FF	00
Z008	(Not display)	00 - FF	00
Z009	(Not display)	00 - FF	00
Z010	(Not display)	00 - FF	00

4.7 ADJUSTMENT PROCEDURE

4.7.1 VIDEO CIRCUIT

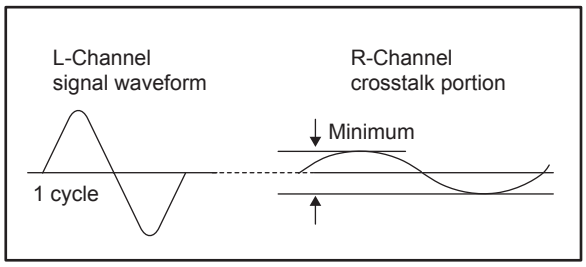
Item	Measuring instrument	Test point	Adjustment part	Description
525i A-D OFFSET	Remote control unit Signal generator		[1.ADJUST] S001: PREPARE (Adjustment setting mode change) S008: 5i CB OF(525i cb offset) S009: 5i CR OF(525i cr offset) S030: R DRIVE(Red drive) S031: G DRIVE(Green drive) S032: B DRIVE(Blue drive)	(1) Receive a 525i component ramp pattern signal. (2) Set "VIDEO STATUS" to **"STANDARD"**. (3) Set "ASPECT" to **"FULL"**. (4) Set "COLOR TEMPERATURE" to **"LOW"**. (5) Select **"1.ADJUST"** from the SERVICE MODE. (6) Set **< S030 >** (R DRIVE), **< S031>** (G DRIVE) and **< S032 >** (B DRIVE) to **"133"**. (7) Set **< S001 >** (adjustment setting mode change) to set **"008"** and it change to the 525i A-D offset adjustment setting mode. (8) Adjust **< S008 >** (525i Cb offset) and **< S009 >** (525i Cr offset) to lose the gap (red line, green line and blue line) which appears at both ends of a white part at the center of the screen. (9) Set **< S001 >** to set **"000"** and it change to the normal mode. (10) Press the **[MUTING]** key to memoirze the set value.
 Disappears the color at both ends.				
1125i BRIGHTNESS	Remote control unit Signal generator		[1.ADJUST] S001: PREPARE (Adjustment setting mode change) S012: HD BL(1125i brightness) S030: R DRIVE(Red drive) S031: G DRIVE(Green drive) S032: B DRIVE(Blue drive)	(1) Receive a 1125i gray scale pattern signal . (2) Set "VIDEO STATUS" to **"STANDARD"**. (3) Set "ASPECT" to **"FULL"**. (4) Set "COLOR TEMPERATURE" to **"LOW"**. (5) Select **"1.ADJUST"** from the SERVICE MODE. (6) Set **< S030 >** (R DRIVE), **< S031>** (G DRIVE) and **< S032 >** (B DRIVE) to **"133"**. (7) Set **< S001 >** (adjustment setting mode change) to set the values **"012"** and it change to the 1125i black level adjustment setting mode. (8) Adjust **< S012 >** (1125i brightness) to set the 0% black part in the upper half of the screen to be brightest. (9) Set **< S001 >** to set **"000"** and it change to the normal mode. (10) Press the **[MUTING]** key to memoirze the set value.
Set the 0% black part to be brightest. 				
1125i A-D OFFSET	Remote control unit Signal generator		[1.ADJUST] S001: PREPARE (Adjustment setting mode change) S013: HD CB OF(1125i cb offset) S014: HD CR OF(1125i cr offset) S030: R DRIVE(Red drive) S031: G DRIVE(Green drive) S032: B DRIVE(Blue drive)	(1) Receive a 1125i 30% all white pattern signal. (2) Set "VIDEO STATUS" to **"STANDARD"**. (3) Set "ASPECT" to **"FULL"**. (4) Set "COLOR TEMPERATURE" to **"LOW"**. (5) Select **"1.ADJUST"** from the SERVICE MODE. (6) Set **< S030 >** (R DRIVE), **< S031>** (G DRIVE) and **< S032 >** (B DRIVE) to **"133"**. (7) Set **< S001 >** (adjustment setting mode change) to set **"013"** and it change to the 1125i A-D offset adjustment setting mode. (8) Adjust **< S013 >** (1125i Cb offset) to minimize the blue noise in the upper half of the screen. (9) Adjust **< S014 >** (1125i Cr offset) to minimize the blue noise in the upper half of the screen. (10) Set **< S001 >** to set **"000"** and it change to the normal mode. (11) Press the **[MUTING]** key to memoirze the set value.
Minimize the red and blue noises in the upper half of the screen. 				

Item	Measuring instrument	Test point	Adjustment part	Description
SUB SCREEN A-D OFFSET	Remote control unit Signal generator		[1.ADJUST] S001: PREPARE (Adjustment setting mode change) S016: RT CB OF (Sub screen cb offset) S017: RT CR OF (Sub screen cr offset) S030: R DRIVE(Red drive) S031: G DRIVE(Green drive) S032: B DRIVE(Blue drive)	(1) Set "VIDEO STATUS" to **"STANDARD"**. (2) Set "ASPECT" to **"FULL"**. (3) Set "COLOR TEMPERATURE" to **"LOW"**. (4) Set "MULTI SCREEN" to **"TWIN"**. (5) Receive a NTSC 30% all white pattern signal on the Right screen. At the same time, set the Left screen in VIDEO-1 mode (No signal). (6) Select **"1.ADJUST"** from the SERVICE MODE. (7) Set **< S030 >** (R DRIVE), **< S031>** (G DRIVE) and **< S032 >** (B DRIVE) to **"133"**. (8) Set **< S001 >** (adjustment setting mode change) to set **"017"** and it change to the sub screen A-D offset adjustment setting mode. (9) Adjust **< S016 >** (Sub screen cb offset) to minimize the blue noise in the upper half of the screen. **If you select an adjustment item < S016 >, then the screen automatically turn to twin pictures mode.** (10) Adjust **< S017 >** (Sub screen cr offset) to minimize the red noise in the upper half of the screen. (11) Readjust **< S016 >** and **< S017 >** to set the upper half of the screen to be the blackest. (See Fig.9) (12) Set **< S001 >** to set **"000"** and it change to the normal mode. (13) Press the **[MUTING]** key to memoirze the set value.
Set the 0% block part to be brightest.  VIDEO-1 <NO SIGNAL> TV(RF) <30% all white>				
WHITE BALANCE (HIGHLIGHT)	Remote control unit Signal generator		[1.ADJUST] S030: R DRIVE (Red drive) S031: G DRIVE (Green drive) S032: B DRIVE (Blue drive)	(1) Receive a NTSC 75% all white signal. (2) Set "VIDEO STATUS" to **"STANDARD"**. (3) Set "ASPECT" to **"FULL"**. (4) Select "COLOR TEMPERATURE" to **"LOW"**. (5) Select **"1.ADJUST"** from the SERVICE MODE. (6) Adjust to keep one of **< S030 >** (Red drive), **< S031 >** (Green drive) or **< S032 >** (Blue drive) unchanged, then lower the other two so that the all-white screen is equally white throughout. **NOTE:** Set one or more of **< S030 >**, **< S031 >**, and **< S032 >** to **"133"**. (7) Check that white balance is properly tracked from low light to high light. If the white balance tracking is deviated, adjust to correct it. (8) Press the **[MUTING]** key to memoirze the set value.

4.7.2 MTS CIRCUIT

<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td>MTS INPUT LEVEL</td><td>Remote control unit</td><td></td><td>[1.ADJUST]
T001: IN LEVEL</td><td>(1) Receive the any broadcast.
(2) Select "1.ADJUST" from the SERVICE MODE.
(3) Verify that the < T001 > (IN LEVEL) is set at its initial setting value.
(4) Press the [MUTING] key to memorize the set value.</td></tr>
<tr><td>MTS SEPARATION</td><td>TV audio multiplex signal generator

Oscilloscope

Remote control unit</td><td>L OUT
R OUT</td><td>[1.ADJUST]
T002: LOW SEP
T003: HI SEP</td><td rowspan="2">(1) Input the stereo L signal (300Hz) from the TV audio multiplex signal generator to the antenna terminal.
(2) Connect an oscilloscope to L OUT pin of the AUDIO OUT, and display one cycle portion of the 300Hz signal.
(3) Change the connection of the oscilloscope to R OUT pin of the AUDIO OUT, and enlarge the voltage axis.
(4) Select "1.ADJUST" from the SERVICE MODE.
(5) Set the initial setting value of the < T002 > (LOW SEP).
(6) Adjust the < T002 > so that the stroke element of the 300Hz signal will become minimum.
(7) Change the signal to 3kHz, and similarly adjust the < T003> (HI SEP).
(8) Press the [MUTING] key to memorize the set value.</td></tr>
<tr><td colspan="4"> 
</td></tr>
</table>

SECTION 5
TROUBLESHOOTING

5.1 SELF CHECK FEATURE

5.1.1 OUTLINE

This unit comes with the "Self check" feature, which checks the operational state of the circuit and displays/saves it during failure.Diagnosis is performed when power is turned on, and information input to the main microcomputer is monitored at all time.Diagnosis is displayed in 2 ways via screen display and LED flashes. Failure detection is based on input state of I^2C bus and the various control lines connected to the main microcomputer.

5.1.2 HOW TO ENTER THE SELF CHECK MODE

Before entering the Self check Display mode, confirm that the setting of **TV/CATV** SW of the REMOTE CONTROL UNIT is at the "TV" side and the setting of VCR/DVD SW is at the "VCR" side. If the switches have not been properly set, you cannot enter the Self check Display mode.

(1) Set to "**0 minutes**" using the **[SLEEP TIMER]** key.
(2) Press the **[VIDEO STATUS]** key and **[DISPLAY]** key simultaneously, then enter the service mode.
(3) Press the **[2]** key (SELF_CHECK) before the service mode screen disappears.
(4) Press the **[SLEEP TIMER]** key to enter Page 2 of the SELF CHECK MODE.
- When the **[RETURN+]** key pressed, the first page change screen.

NOTE:

When a number key other than the **[2]** key is pressed in the SERVICE MENU SCREEN, the other relevant screen may be displayed.
This is not used in the SELF CHECK. Press the **[MENU]** key to return to the SERVICE MENU SCREEN.

5.1.3 HOW TO EXIT THE SELF CHECK MODE

TO SAVE FAILURE HISTORY:

Turn off the power by unplugging the AC power cord plug when in the Self check display mode.

TO CLEAR (RESET) FAILURE HISTORY:

Turn off the power by pressing the **[POWER]** key on the remote control unit when in the Self check display mode.

5.1.4 FAILURE HISTORY

Failure history can be counted up to 9 times for each item. When the number exceeds 9, display will remain as 9. Failure history will be stored in the memory unless it has been deleted.

NOTE:

Only SYNC (with/without sync signals) will be neither counted nor stored.

5.1.5 POINTS TO NOTE WHEN USING THE SELF CHECK FEATURE

In addition to circuit failures (abnormal operation), the following cases may also be iagnosed as "Abnormal" and displayed and counted as "NG".

(1) Temporary defective transmissions across circuits due to pulse interruptions
(2) Misalignment in the on/off timing of power for I^2C bus (VCC) when turning on/off the main power.

Diagnosis may be impeded if a large number of items are displayed as "NG". As such, start Self check check only after 3 seconds in the case of receivers and 5 seconds in the case of panels upon turning on the power. If recurrences are expected, ensure to clear (reset) the failure history and record the new diagnosis reults.

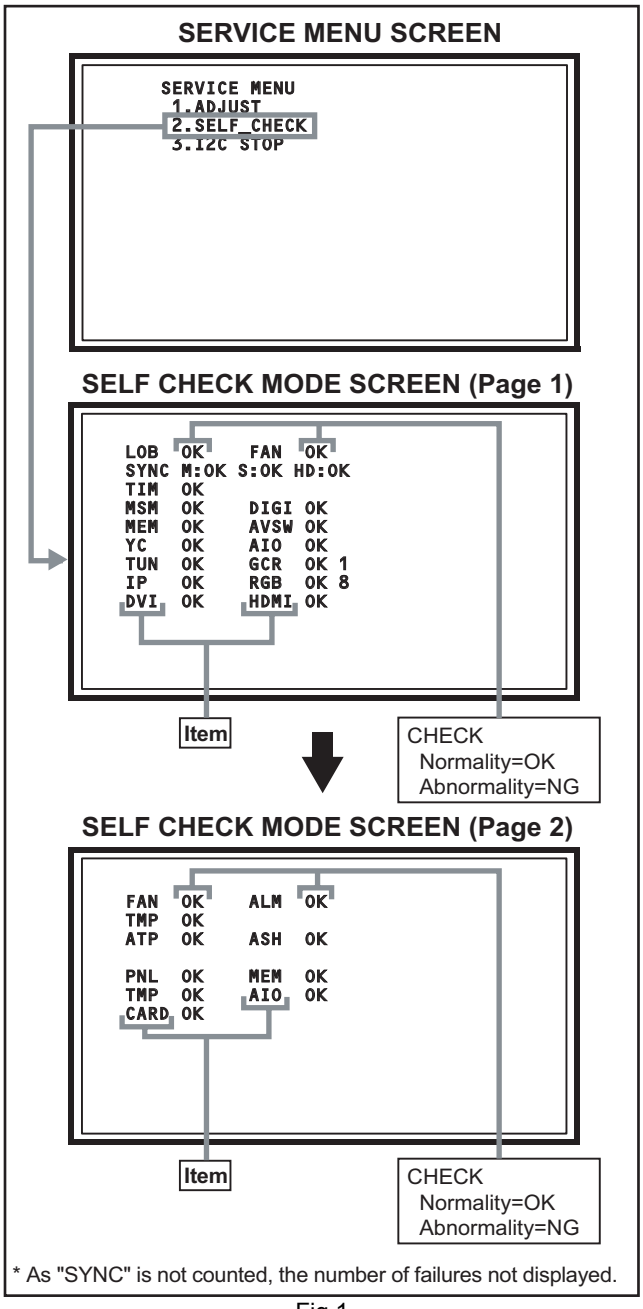


Fig.1

5.1.6 DETAILS

Self check is performed for the following items:

< Page 1 of screen >

Detection item	Display	Detection content	Diagnosis signal (line)	Detection timing
Low bias line short protection	LOB	Confirm the operation of the low bais (5V / 9V) protection circuit. **Q9801, Q9802 [REGULATOR PWB]**	LB_PRO	Detection starts 3 seconds after the power is turned on. If error continues between 400ms the power is turned off.
Fan lock	FAN	Not used.	---	---
Presence of sync signal	SYNC	Confirmation of presence of video sync signal. M : Main sync signal S : Sub sync signal HD : Component sync signal **IC201 [ANALOG SIGNAL PWB]**	SDA	Confirmation of presence of sync signal in video signal.
AC power input	TIM	Not used.	---	---
Main CPU communication	MSM	Confirmation of ACK (response) signal which uses sync communications with Chassis CPU. **IC7601 [DIGITAL SIGNAL PWB]**	WAKE	If it checks whenever sync communication with SHM performed and no reply of ACK signal an error will be counted.
Digital tuner	DIG	Not used.	---	---
Main memory	MEM	Confirmation of reply of ACK signal which uses I^2C communication. **IC7602 [DIGITAL SIGNAL PWB]**	SDA	If it checks whenever I^2C communication is performed and no reply of ACK signal an error will be counted.
AV select switch	AVSW	Same as above. **IC301, IC501 [ANALOG SIGNAL PWB]**	SDA	Same as above.
3 dimensions YC separator	YC	Same as above. **IC1001 [DIGITAL SIGNAL PWB]**	SDA	Same as above.
Multi sound process	AIO	Same as above. **IC1140 [RECEIVER PWB]**	SDA	Same as above.
RF tuner	TUN	Same as above. **TU3001 [RECEIVER PWB]**	SDA	Same as above.
Ghost reduction	GCR	Not used.	---	---
DIST process	IP	Confirmation of reply of ACK signal which uses I^2C communication. **IC3001 [DIGITAL SIGNAL PWB]**	SDA	If it checks whenever I^2C communication is performed and no reply of ACK signal an error will be counted.
RGB process	RGB	Not used.	---	---
DVI (Digital communication)	DVI	Not used.	---	---
Digital input	HDMI	Confirmation of reply of ACK signal which uses I^2C communication.	SDA	If it checks whenever I^2C communication is performed and no reply of ACK signal an error will be counted.

< Page 2 of screen >

Detection item	Display	Detection content	Diagnosis signal (line)	Detection timing
Fan lock	FAN	Not used.	---	---
Abnormal of operation of PANEL	ALM	Not used.	---	---
Abnormal rise oftemperature in PANEL	TMP	Not used.	---	---
Abnormal rise of temperature in AUDIO PWB	ATP	Not used.	---	---
Short circuit detection of AUDIO PWB	ASH	Not used.	---	---
Panel communication	PNL	Not used.	---	---
Sub memory	MEM	Not used.	---	---
Temp. sensor	TMP	Not used.	---	---
Audio control	AIO	Not used.	---	---
Abnormal rise of CARD VIEWER PWB	CARD	Comfirmation of reply of ACK signal which uses SDA communication. **IC1001 [CARD VIEWER PWB]**	SDA	If it checks whenever SDA communication is performed and no reply of ACK signal an error will be counted.

5.1.7 METHOD OF DISPLAY WHEN A RASTER IS NOT OUTPUT

In the state where a raster is not output by breakdown of the set, an error is displayed by blink of the POWER LED.

Type of error	Display	POWER LED flash cycle
Low bias line short protection	LOB	Low luminance blue turnig on and off at 1 second intervals.
ATSC digital tuner communication error	---	Low luminance blue Flash 2.0 second / Low luminance blue Out 2.0 seconds
Fan lock	---	Low luminance blue Flash 2.0 second / Low luminance blue Out 2.0 seconds

< Explanation of operation >

If error is detected, the power is turned off.
Shortly after a power is turned off, POWER LED will be blinked.
Power cannot be turned on until the power cord takes out and inserts, after a power is turned off.

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